SCREENING MODEL Parameters
Instructions for Form M-1

Form M-1 should be completed for each facility submitting a screening model or when requesting that MCAQ conduct a screening model for a toxics review. A toxics review may be required due to a permit application, MACT applicability determination, or call by the Director.

SITE NAME - Identify the name of the facility.

PREMISE # - New and/or previously unpermitted facilities may leave this blank.

SITE ADDRESS - Identify the legal address at which this facility is located.

CITY - Identify the city, town, or postal jurisdiction in which the facility is located.

ZIPCODE - Identify the postal zip code for the area in which the facility is located.

EMISSION POINT ID - On this row, enter the identification for each point. These are column headings for the next nine (9) rows of data.

GEP Stack Height – For emission sources having stacks or "point sources", Good Engineering Practice (GEP) stack height is the height above ground of undisturbed atmospheric flow, H_g. This is the minimum height needed to prevent the stack exhaust plume from being entrained in the wake of nearby structures. The equation to determine GEP stack height is: $H_g = H + 1.5L$, where, H_g = good engineering practice stack height, H = height of adjacent or nearby structure, L = lesser dimension (of the *projected width* or the *height* of the adjacent structure).

Structures within 5L of the emission source are considered adjacent or nearby and should be evaluated for determining GEP stack height. The structure resulting in the largest GEP stack height (H_g) for each source is identified as the critical structure for that source. Provide parameters for the critical structure in the building parameters section of Form M-1.

BUILDING PARAMETERS:

For downwash effects, use dimensions for the structure with the largest GEP for each stack modeled (i.e. the critical structure).

➢ **Building ID/Name** - This would be a method of identifying the building, or land mass that causes the significant downwash for an emission point.

➢ **Building Width** - This is the minimum dimension of the building or land mass that causes the significant downwash for this emission point. The first column is for the units of measurements selected (feet/meters/yards/inches/etc.)

➢ **Building Length** -This is the maximum dimension of the building or land mass that causes the significant downwash for this emission point.

➢ **Building Projected Width** - This is the hypotenuse of the length and width of the building or land mass that causes the significant downwash for this emission point. To calculate this, take the square root (/) of the sum of the width squared and the length squared.

➢ **Building Height** -This is the height (relative to the ground level of the emission point) of the building or land mass that causes the significant downwash for this emission point.

- **Distance from Stack** - This is the distance of the building or land mass that causes the significant downwash for this emission point from the emission point. This distance should be less than five (5) times the lesser of the *projected width* or the *height*.

- **Degrees from North of Maximum Building Horizontal Dimension –** angle of the maximum dimension relative to North (0-179 degrees).

- **Degrees from North of Stack Location Relative to Building Center** – angle relative to North of the stack (0-360 degrees).

- **Distance between the Stack and Building Center**.
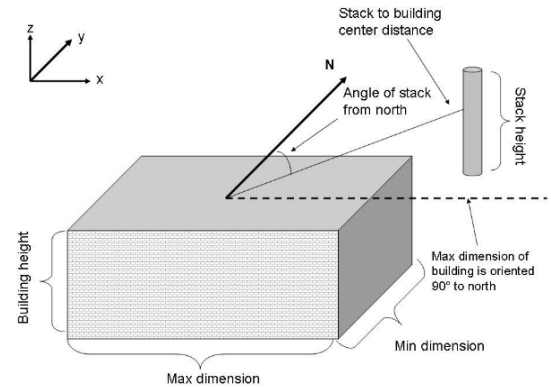
TERRAIN DATA:

Indicate the type of terrain modeled/to be modeled. Complex terrain modeling should be performed for facilities where terrain within 5 km of the facility exceeds any stack height. Elevated Terrain: if terrain heights exceed the stack base elevation within 5 km of the modeled stack, include terrain data file (demlist.txt). AerMod Digital Elevation Model (DEM) files can be found on the MCAQ Modeling website.

- **Ground Level** - This is the level of the ground at the base of the stack, or building on which the stack is located. This can be made a zero reference elevation with all other elevations identified as the height above this point, or it can be the USGS elevation above sea level. If there is a lower point in the area, the lower point can be made the 0 reference elevation.

- **Distance to Nearest Property Line** - This is the linear distance from the emission point to the nearest property line, which will be used to start the receptor array in the dispersion models.

LAND USAGE - Indicate the appropriate land usage for the area within three (3 km) kilometers of the facility. This would be equal to 9900 feet. Due to the urbanization of Mecklenburg County, there no longer is a "default" classification. MCAQ will coordinate a land usage classification for the site when informed that modeling is to be done for a facility.

REQUEST FOR MCAQ TO PERFORM SCREENING MODELING - Complete this section to request that **MCAQ** conduct screening modeling using the data provided in the application.

SUPPLEMENTAL INFORMATION:

- **Site/Facility Diagram** - A site plan, or sketch, showing dimensions of on-site structures, a north arrow, emission points, and distance from emission points to nearest property line. Dimensions and distances may reference data provided in this section of the application package.

- **SUPPLEMENTAL INFORMATION: Topographic Map** - A map showing topographic information a minimum of three (3) kilometers [1.875 miles] from the center of the facility must be submitted if there is terrain higher than 50% of the shortest stack height. Maps of this kind may be found at the United States Geological Survey (USGS) or Mecklenburg County GIS Group.

Note: Refined modeling must be performed if the initial/screening model results in a maximum off-site concentration greater than 95% for a pollutant with a 1-hour screening level, or greater than 100% for any other pollutant of the AAL. For refined modeling, no further modeling is necessary if the most recent year of met data is used and modeling results are below 50% of AAL. If concentrations exceed 50%, the latest 5 years of met data must be used.

SECTION M
SCREENING MODEL Parameters

SITE NAME:		PREMISE #:

SITE ADDRESS:		

CITY:		ZIPCODE:

Downwash Factors

Emission Point ID								

GEP Stack Height (Indicate units, ft or m)

H_g = H+1.5L								

Building Parameters (Indicate units, ft or m or degrees)

Building ID/Name								
Width								
Length								
Projected Width								
Height								
Distance from Stack								
Degrees from North of maximum building horizontal dimension (0-179 degrees)								
Degrees from North of stack location relative to building center (0-360 degrees)								
Distance between stack and building center								

Terrain Data (Indicate units, ft or m)

Select One	☐ Simple	☐ Complex						
Terrain Data File Included	☐ Yes	☐ No						
Ground Level								
Land Usage	☐ Urban	☐ Rural						

Request for Mecklenburg County Air Quality ("MCAQ") to Perform Screening Modeling

In accordance with the Mecklenburg County Air Pollution Control Ordinance ("MCAPCO") Regulation 2.1106 - "Determination of Ambient Air Concentrations," I request that MCAQ perform **screening modeling** based on the submitted information. Should the model demonstrate an exceedance of the applicable acceptable ambient levels ("AALs") for any pollutant, the permit application will be considered "incomplete" until such time as a model demonstrating compliance is submitted.

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Printed Name and Title of Company Official   Signature   Date

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Supplemental Information

Please provide the following supplemental information:

☐ Site/Facility Diagram

☐ Topographic Map (If there is terrain higher than 50% of the shortest stack height within 3 kilometers of the facility)